

AI-Powered Sales Development Representative (SDR) Email Outreach System

System Architecture and Key Components

The AI-powered SDR Email Outreach System is designed to automate essential tasks in the sales process, including prospect research, personalized email generation, review, and follow-ups. The system streamlines outreach, saving time while improving the quality of engagement.

Built using **FastAPI** for the backend, the system handles all operations, including research, email drafting, review, sending, and response tracking. The frontend is developed using **Streamlit**, allowing users to input prospect details, **upload product catalogs, and sales email templates**, and manage the outreach flow seamlessly.

Prospect Research and Email Generation

For prospect research, I initially considered the Perplexity API but switched to the **Serper API** due to cost concerns. Serper handles web search, while **CrewAI with LLaMA 3.1** generates detailed research reports on the prospect and their company. Based on this research and the uploaded product catalog, the system generates highly personalized emails using LLaMA 3.1.

The generated emails are compared with winning sales email templates, uploaded by the sales rep, to ensure optimization. The system uses **ollama mixtral** models to refine and enhance the draft based on proven best practices. Once finalized, emails are sent using **SMTP integration**, secured via Gmail's app-specific password.

In addition to sending, the system tracks replies from prospects using **IMAP**. For the demo, it checks responses every 60 seconds, but this can be adjusted for production use. When a reply is received, the system automatically generates **context-aware follow-ups using LLM**. All relevant data, including replies, is stored in **a JSON file**, ensuring clear tracking.

Challenges and Future Improvements

Challenges included handling the cost of the **Perplexity API**, which led to switching to more cost-effective solutions. Future improvements include implementing SPF, DKIM, and DMARC to prevent from marking as spam, scaling the system via cloud infrastructure, improving data security with encryption, and integrating predictive AI insights for sales.

In conclusion, this system significantly boosts the efficiency of sales teams by automating repetitive tasks and ensuring personalized outreach. It's adaptable across industries and offers future scalability with AI-driven enhancements.